

Evidence Based Oxygen Thresholds for Bronchiolitis Could Help Ease Bed Burden

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Bronchiolitis accounts for a large number of acute paediatric admissions annually, with a significant burden on healthcare costs and the economy^{1, 2}. Length of stay in hospital can be influenced by a number of factors but the requirement and duration for oxygen therapy is a crucial factor influencing discharges^{5, 6}. There is a significant variance in clinical practice worldwide and in Ireland despite the ubiquity of this problem⁵. Given the current pressures on paediatric beds nationally it is important to be cognisant of the latest evidence based guidelines and studies which suggest it is safe and advisable to adopt the following oxygen thresholds during treatment of stable patients with bronchiolitis¹⁻⁵.

Firstly, it is important to be mindful of high risk groups which are at increased risk of poorer outcomes in bronchiolitis. Those who are young, ex premature, have chronic lung disease, congenital heart disease, neuromuscular disease, and infants with Down syndrome. These cohorts may require extra clinical discretion but for stable infants (and no concerns re: sepsis or significant anaemia) the WHO, advisory bodies in Australia³ and North America² deem acceptable oxygen saturations to be equal or greater than 90%. Similarly in the UK, however 92% is the threshold if less than 6 weeks old or at greater risk⁴. The rationale behind this is based on the physiology underpinning the oxygen dissociation curve. An oxygen saturation of 90% vs 94% is represented at the flattest part of the curve, highlighting minimal differences in PaO₂ for this oxygen saturation differential. Once oxygen saturations drop below this point the curve steepens and there are greater drops in PaO₂¹. To date lower oxygen saturations in this context does not seem to have caused significant effects on neurodevelopment, although proper follow up studies are required⁵.

Before discharge infants with bronchiolitis should have attained normal oxygen saturations for a reliable period of time. In the past patients occupied inpatient beds until they were off oxygen therapy overnight. This practice is now outdated and represents a potential source of overdue discharges which add to the pressures on beds. It is now recommended patients can be discharged if oxygen saturations can be maintained in room air at the following levels: for four hours, including a period of sleep, equal or greater than 90% for children older than 6 weeks, or 92% for children younger than 6 weeks or with underlying health conditions⁴.

Given the unprecedented number of presentations to acute paediatric services nationwide already this bronchiolitis season, it is imperative that we facilitate safe and timely discharges of children with bronchiolitis. Paediatric advisory institutions worldwide are largely in agreement on the oxygen thresholds for stable infants with bronchiolitis. Where clinically indicated, we must strive to follow them. This should reduce the length of stay, improve patient outcomes, reduce the burden on medical colleagues and result in financial benefits for our health service and wider economy.

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